

## **REMARKS**

### **Status of the claims:**

With the above amendments, claims 41 and 52 have been amended, claims 51 and 53 have been canceled, and claims 6-21, 45-46, and 54-66 have been withdrawn. Claims 67 and 68 have been added. Support for new claims 67 and 68 can be found in the specification at page 11. Support for the amendments to claims 41 and 52 may be found in the specification at page 7. No new matter has been added by way of the amendments. Thus, claims 41-44, 52 and 67-68 are pending and ready for further action on the merits.

### **Rejections Under 35 U.S.C. § 102(b)**

The Examiner has rejected claims 41-42 under 35 U.S.C. § 102(b) as being anticipated by Hori et al. ("Hori") (Plant Foods for Human Nutrition, 1994, 45: 63-70). Applicants traverse.

The Examiner states that Hori teaches a soup and salad comprising *Nostoc commune* and the benefits of using *Nostoc commune* in food. See Office Action at 3. The Examiner states that the Applicants' claims are directed to a food product comprising colonies of *Nostoc* and therefore the claims are anticipated by Hori.

Hori is concerned with the effectiveness of *Nostoc commune* as a source of dietary fiber to lower cholesterol. See Hori at 64. The *Nostoc commune* utilized in the study by Hori was grown spontaneously in the wild on a university campus and was harvested and simply washed with water to remove dirt. See id. Further, Hori makes no mention of the size of the colonies of *Nostoc commune* used in the study. See id.

In contrast, the biologically pure cultures of *Nostoc*, according to an embodiment of the present invention, are substantially free of contaminants such as natural contaminants, including mud, sand, grass, and/or dirt. By substantially free, it is meant that the *Nostoc* strain is present in an amount that is at least 90% pure, more preferably at least 95% pure, and most preferably at least 99% pure. See Specification at 7. Further, the biologically pure culture of *Nostoc* in an embodiment according to the present invention consists of colonies of uniform size between 0.1mm to 10mm in diameter.

As Hori neither teaches biologically pure cultures of *Nostoc*, nor colonies of uniform size between 3 mm and 5 mm, Hori fails to anticipate claims 41–42 of the present invention. Applicants respectfully submit that the rejection has been obviated and request that the rejection be withdrawn.

The Examiner also rejects claims 41 and 51–53 under 35 U.S.C. § 102(b) as being anticipated by Qiu et al (“Qiu”) (J. of Applied Phycology, 14: 423-429, 2002). Because Applicants have canceled claims 51 and 53 the rejection of claims 51 and 53 are moot. Applicants traverse with respect to claims 41 and 52.

The Examiner states that Qiu teaches *Nostoc* in a food product as well as colonies of size greater than 0.1mm to 10mm. See Office Action at 4. The Examiner further asserts that the *Nostoc* disclosed in Qiu is *Nostoc commune*. See id.

The cultures of *Nostoc* described by Qiu are edible species grown in the mountain paddy fields in China. See Qiu, Abstract. The colonies may reach 0.5 to 2 cm in diameter. See Qiu at 424, column 1. The colonies have the grass and soil removed, but are otherwise unpurified. Further, Qiu states that not all of the dirt is removed and some must be removed by wet chopsticks after the drying process. See Qiu at 424, column 2.

As described above, the colonies of Qiu are not biologically pure, as required by the present invention. Since the colonies are harvested directly from the paddy fields, they may contain various contaminants, including pesticides, fungicides, insecticides and herbicides in addition to the natural contaminants such as grass and dirt already mentioned by Qiu. Colonies of *Nostoc*, according to the present invention, are substantially free of all of the above-listed contaminants. See Specification at 7. Colonies of *Nostoc* are grown, according to embodiments of the present invention, using a sterile medium. See Specification at 8. Therefore, the food product produced from *Nostoc* colonies according to the present invention would be substantially free of all of the above mentioned contaminants, unlike the food product described by Qiu. As Qiu fails to teach a biologically pure culture of *Nostoc*, it can not anticipate currently pending claims 41 and 52. Applicants therefore respectfully request that the Examiner withdraw the rejection.

**Rejections Under 35 U.S.C. § 103(a)**

Claims 41–44 and 51–53 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hori in view of Li et al. (“Li”) (Euro. J. Phycology, (2004), 39: 9-15). Because Applicants have canceled claims 51 and 53, the rejection of those claims is rendered moot. Applicants traverse with respect to remaining claims 41 – 44 and claim 52.

To establish a proper case of obviousness, one must apply the *Graham v. John Deere* factors. These factors include:

- (A) *Determining the scope and contents of the prior art;*
- (B) *Ascertaining the differences between the prior art and the claims in issue;*

(C) Resolving the level of ordinary skill in the pertinent art; and  
(D) Evaluating evidence of secondary considerations.  
See *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966).

Moreover, recently in the KSR case, regarding obviousness, the Court held

*Often, it will be necessary . . . to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. See In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006) ([R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness).*

See *KSR International Co. V. Teleflex Inc. et al.* 550 U.S. 398, 127 S. Ct. 1727, 1741 (2007).

When the *John Deere* factors and the holding in *KSR* are considered in light of the rejection presented, one can only conclude the instantly claimed invention is non-obvious for the following reasons.

The Examiner states that Hori teaches a soup and salad comprising *Nostoc commune* and the benefits of using *Nostoc* in food. See Office Action at 5. The Examiner states that Hori does not teach the claimed colony size. However, the Examiner asserts that Li teaches *Nostoc commune* as an edible cyanobacterium which grows in colony sizes ranging from 0.1 mm to about 10 mm. See Office Action at 6. However, the Examiner admits that neither reference teaches the claimed amounts of *Nostoc* added to a food product. Nevertheless, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to add a desired amount of *Nostoc* to a food product.

Claim 41 of the present invention provides for food products comprising a biologically pure culture of *Nostoc* wherein at least 80% of the colonies of *Nostoc* are of uniform size between 3 mm and 5 mm. The benefits derived from food products comprising biologically pure cultures of *Nostoc* wherein 80% of the colonies are of uniform size are the ability to produce large quantities of colonies without the cost of removing contaminants. Uniform colonies are generated, according to embodiments of the present invention by the use of fluorescent light to synchronize the growth cycles of the *Nostoc* in order to generate a more uniform distribution of size. See page 11 of the written description. Furthermore, *Nostoc* colonies of the present invention contain the monosaccharides rhamnose and fucose as well as greater amounts of phycoproteins than are found in *Nostoc* colonies harvested from nature as cited in new claims 67-68.

The soup and salad comprising *Nostoc commune* taught by Hori is derived from *Nostoc commune* that has been harvested from the wild and contains various contaminants, including dirt. The *Nostoc commune* taught by Hori is not biologically pure. Food products as claimed in claims 41-44, 52, and 67-68 are substantially free of contaminants, as described above. The Examiner asserts that Li makes up for the deficiencies of Hori in that it discloses *Nostoc commune* colonies ranging in size from 0.1 mm to 10 mm. However, Li describes colonies from *Nostoc sphaeroides*. The Examiner asserts that *Nostoc sphaeroides* are the same as *Nostoc commune*. However, Qiu treats these two species as different forms of *Nostoc*. See Qiu at 427, Taxonomic identity of Ge-Xian-Mi. Assuming arguing *Nostoc sphaeroides* is the same as *Nostoc commune*, Li still fails to make up for the deficiencies of Hori. The combination of Hori and Li does not disclose a biologically pure culture of *Nostoc* wherein at least 80% of the

colonies are of a uniform size between 3 mm and 5 mm. As Hori, neither alone nor in combination with Li, teaches each and every element of claim 41, the Examiner has failed to present a *prima facie* case of obviousness. The same applies to claims 42-44, 52, and 67-68 as they depend from claim 41.

Withdrawal of the rejection is warranted and respectfully requested.

### **CONCLUSION**


With the above amendments and remarks, Applicants believe that all objections and/or rejections have been obviated. Thus, each of the claims remaining in the application is in condition for immediate allowance. A passage of the instant invention to allowance is earnestly solicited.

Applicants respectfully petition for one month extension of time. Applicants believe that no fee is necessary, however, should a fee be deemed to be necessary, the Commissioner is hereby authorized to charge any fees required by this action or any future action to Deposit Account No. 16-1435.

Should the Examiner have any questions relating to the instant application, the Examiner is invited to telephone the undersigned at (336) 607-7442 to discuss any issues.

Respectfully submitted,

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